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EXAMINER	
ROMAN, LUIS ENRIQUE	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,893	KOLOMEITSEV, SERGEI F.	
	Examiner	Art Unit	
	Luis Roman	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant amendment filed on 02/06/06 has been entered. Accordingly claims 1-9, 11-17, 19, 20, 22, 23 have been kept original, claims 10, 18, 21 have been amended and no claim has been cancelled. New claims 24, 25 were added. It also included remarks/arguments.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C.102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (e) The invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.
> The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 18, 19 & 21 are rejected under 35 U.S.C. §102(e) as being anticipated by Stridsberg (US 6885162).

Regarding claim 18 Stridsberg discloses a method (a person of the ordinary skill will understand a method that is intrinsically described by the functioning of the apparatus) of reducing adverse effects of a short (Col. 1 lines 46-49) in a stator of a 3-phase (Fig. 3 phases U, V, W) DC automotive steering motor of a type having a permanent magnet rotor, and a wire wound stator (Abstract) provided with 6 poles (Fig. 3 elements U_{1-3}, V_{1-3}, W_{1-3}, U_{4-6}, V_{4-6}, W_{4-6}), said method comprising the steps of:
(1) organizing said 6 poles into 2 groups (Fig. 3 first group U_{1-3}, V_{1-3}, W_{1-3} & second group U_{4-6}, V_{4-6}, W_{4-6}) of 3 poles each, with each pole being separately excited (Fig. 3

first group pole U1-3 excited by switches T13-T16, pole V1-3 excited by switches T17-T20 pole W1-3 excited by switches T21-T24 similarly for second group);
(2) detecting said short (Abstract & Fig. 3 through sensor 302);
(3) identifying the pole wherein said short occurred (Col. 2 lines 49-60),
(4) identifying the pole group of the failed pole (Fig. 4 element 403), and
(5) terminating current flow to all poles in the pole group of the failed pole (Abstract<last sentence> & Col. 2 lines 32-40 and 57-65 & Col. 12 lines 1-11 & Fig. 5 elements 501-506<with the appropriate set of switches activated a pole group is terminated).

Regarding claim 19 Stridsberg discloses a method according to claim 18 further comprising the step of:
Stridsberg further discloses wherein:
(6) physically placing all poles assigned to a first one of said two pole groups semi-circularly side-by-side (Fig. 2); and
(7) physically placing all other ones of said poles diametrically opposite corresponding poles of said first one of said two pole groups (Fig. 2).

Regarding claim 21 Stridsberg discloses a method of ameliorating the effect of a short in a brushless DC induction motor having a permanent magnet rotor and M three-phase pole, groups (Col. 1 lines 46-49), said method comprising the steps of:
(1) detecting the occurrence of said short (Col. 2 lines 49-60);
(2) identifying a pole group in which said short occurred (Fig. 4 element 403); and
(3) disabling all poles in said pole group, so that poles which are not members of said pole group are available for countering drag torques arising as a consequence of said short (Abstract<last sentence> & Col. 2 lines 32-40 and 57-65 & Col. 12 lines 1-11 & Fig. 5 elements 501-506<with the appropriate set of switches activated a pole group is terminated).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 20, 22, 23, 24 & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukai et al. (US 5927430) in view of Stridsberg (US 6885162).

Regarding claim 1 Mukai et al. discloses an automotive steering assist system comprising a DC motor (Abstract).

Mukai et al. does not disclose in detail what type of DC motor is used in an automotive steering assist system.

Stridsberg discloses a system comprising a DC motor having a permanent magnet rotor and a stator (Col. 10 lines 28-30) including 2m poles (Col. 4 lines 24-27) subject to shorts (Col.2 lines 59-60), the improvement wherein said poles are organized into first and second m-phase groups (Col. 4 lines 24-27), said system further comprising: means for detecting a short in any of said poles, and means for disabling all of said poles within the m-phase group of a said pole which has been so detected (Col. 2 lines 57-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made that the brushless DC motor system of Stridsberg may be used as an automotive steering assist system to provide to Mukai et al. device with a system for controlling rotational movement, which can detect different type of faults, and accomplishing this with the use of high reliability motor system.

Regarding claim 2 Mukai et al. in view of Stridsberg discloses the automotive steering assist system improvement according to claim 1.
Stridsberg further discloses wherein m=3 (Col. 10 lines 7-11).

Regarding claim 3 Mukai et al. in view of Stridsberg discloses the automotive steering assist system improvement according to claim 2.
Stridsberg further discloses wherein all of said poles within any said pole group are wye connected at a null point (Col. 10 lines 7-11 & Fig. 1<it is disclosed also that the number of poles in each pole group and the number of pole groups can be varied>).

Regarding claim 4 Mukai et al. in view of Stridsberg discloses the automotive steering assist system improvement according to claim 2.
Mukai et al. further discloses the system further comprising means for delivering pulse width modulated driving signals to said poles (Fig. 2 element 41).

Regarding claim 5 Mukai et al. in view of Stridsberg discloses the automotive steering assist system improvement according to claim 4.

Stridsberg further discloses wherein said motor comprises a permanent magnet rotor and a wire-wound stator (Col. 9 lines 9-11), said stator having a generally circular cross-section and being wound to define six radially extending poles, which are circularly positioned at regular 60 degree intervals (Col 4 lines 27-30 & Fig. 2 & Fig 3<a six pole configuration U_{1-3}, V_{1-3}, W_{1-3}, U_{4-6}, V_{4-6}, W_{4-6}, Intrinsically disclosed is the separation of 60 degrees between poles. (360 degrees divided by 6 poles results in 60 degrees).

Regarding claim 7 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 5.
Stridsberg further discloses wherein said first m-phase group comprises three adjacent ones of said poles (Fig. 2 elements U_{1-3}, V_{1-3}, W_{1-3}), and said second m-phase group comprises three of said poles (Fig. 2 elements U_{4-6}, V_{4-6}, W_{4-6}), diametrically opposing said poles of said first m-phase group (Fig. 2, m=3 phases U, V, W).

Regarding claim 8 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 5.
Stridsberg further discloses comprising means for delivering pulse width modulated driving signals to said poles (Col. 6 lines 15-17).

Regarding claim 9 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 3.
Mukai et al. further discloses comprising means for delivering pulse width modulated driving signals to said poles (Fig. 2 elements 42 & 43).

Regarding claim 10 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 9.
Mukai et al. further discloses wherein said means for delivering pulse width modulated driving signals to said poles comprises.
(a) a DC power source (Fig. 2 element BAT(+));
(b) a DC power sink (Fig. 2 element BAT(-));
(c) computing means for generating pulse-width modulated command signal (Fig. 2 element 20)
(d) a pair of inverters of like construction, each comprising. a set of switches connected for directing a flow of current between one of said 3-phase groups of poles and either said DC power source or said DC power sink, the direction of said Y flow of current being toggled in accordance with the binary state of said pulse-width modulated command signal (Figs. 2 & 3 elements T1-T12 & T13-T24).

Regarding claim 11 Mukai et al. in view of Stridsberg discloses a motor vehicle steering system having a manually operated steering wheel and direction control apparatus responsive to rotational movement of said steering wheel by causing a directional change of said motor vehicle, steering assistance apparatus (Abstract) comprising,

(a) first sensor for generating a first sensing signal indicative of torque being applied to said steering wheel (Fig. 3 element 12);

(b) a second sensor for generating a second sensing signal indicative of a rotational position of said steering wheel (Fig. 3 element 14);

(c) computing apparatus programmed to read said first and second sensing signals, and to generate torque assist command signals therefrom (Fig. 3 element 20A), said torque assist command signals being directed into a torque assist channel (Fig. 3 connections coming out of element 43 and getting in element 10) and,

(d) a motor having a permanent magnet rotor and a wire wound stator, the poles being connected for receiving torque assist commands transmitted by one of said torque assist channels, and able to generate the corresponding torques (Col. 4 lines 62-67 & Col. 5 lines1-3 & Fig. 3 element 10).

Mukai et al. does not disclose,

two separate m-phase channels and said stator being provided with 2 groups of m-phase wire wound poles,

(e) a short detector for appraising said computing apparatus concerning the existence of shorts in said stator, said computer being programmed to generate control signals which switch off current to the windings of all poles within any channel in which a short has been detected.

Stridsberg teaches,

two separate m-phase channels (Fig. 4 connections 404 from element 403 to element 406<three upper lines of set 404, first channel and three bottom lines of set 404, second channel>) and said stator is being provided with 2 groups of m-phase wire wound poles (Fig. 3),

(d) a motor having a permanent magnet rotor and a wire wound stator, said stator being provided with 2 groups of m-phase wire wound poles, the poles in each of said pole groups being connected for receiving torque assist commands transmitted by one of said torque assist channels, and able to generate the corresponding torques (Abstract); and

(e) a short detector for appraising said computing apparatus concerning the existence of shorts in said stator, said computer being programmed to generate control signals which switch off current to the windings of all poles within any channel in which a short has been detected (Abstract & Fig. 5 <a group of extra switches 501-506, with the appropriate set of switches activated a pole group may be terminated>).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mukai et al. device with the motor of Stridsberg which dramatically reduces the risk of phase to phase shortages, is capable of delivering torque or power even with a ground to phase shortage, when a short circuit inside a phase winding, or when a permanently open power switch, a permanently shortened power switch, or various types of failure causes abnormal heating of windings parts.

Regarding claim 12 Mukai et al. in view of Stridsberg discloses a steering assistance apparatus according to claim 11.

Stridsberg further discloses wherein m=3 (Col. 10 lines 7-11).

Regarding claim 13 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 2.

Stridsberg further discloses wherein all of said poles within any said pole group are wye connected at a null point (Col. 10 lines 7-11<it is disclosed also that the number of poles in each pole group and the number of pole groups can be varied; then having two or more wye groups is just duplication of parts>).

Regarding claim 14 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 13.
Stridsberg further discloses that comprising means for delivering pulse width modulated driving signals to said poles (Col. 6 lines 15-17).

Regarding claim 15 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 14.
Stridsberg further discloses wherein said motor comprises a permanent magnet rotor and a wire-wound stator (Col. 10 lines 28-32 & Col. 9 lines 9-11), said stator having a generally circular cross-section (Fig. 2) and being wound to define six radially extending poles (Col. 10 lines 10-11 & Fig. 2), which are circularly positioned at regular 60 degree intervals (This means they are equidistant, which can be seen in Fig. 2).

Regarding claim 17 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 15.
Stridsberg further discloses wherein said first m-phase group comprises three adjacent ones of said poles (Fig. 2 elements U_{1-3}, V_{1-3}, W_{1-3}), and said second m-phase group comprises three of said poles (Fig. 2 elements U_{4-6}, V_{4-6}, W_{4-6}), diametrically opposing said poles of said first m-phase group (Fig. 2, m=3 phases U, V, W).

Regarding claim 20 Mukai et al. in view of Stridsberg discloses a method according to claim 19.
Mukai et al. further discloses comprising wherein said step of terminating current flows is carried out by using pulse-width-modulated signals to turn off transistors supplying current to poles (Col. 5 lines 59-67 & Col. 6 lines 1-6).
Stridsberg further discloses turning off the pole group when a fault is detected in a pole (Abstract<last sentence> & Col. 2 lines 32-40 and 57-65 & Col. 12 lines 1-11 & Fig. 5 elements 501-506<with the appropriate set of switches activated a pole group is terminated).

Regarding claim 22 Mukai et al. in view of Stridsberg discloses a method according to claim 21.
Stridsberg further discloses wherein the value of M is 2 (Stridsberg teaches that the value of N may vary. Therefore it may be 2 - Col.10 lines 10-11).

Regarding claim 23 Mukai et al. in view of Stridsberg discloses a method according to claim 22.
Stridsberg further discloses the step of operating said poles, which are not members of said pole group (Col. 12 lines 1-11). This may be used to assist an operator in the steering of an automotive vehicle.

Regarding claim 24 Mukai et al. in view of Stridsberg an automotive steering assist system, comprising:
Stridsberg further discloses,
a) an electric motor which includes a stator which comprises six poles (Figs. 2 & 3 elements U_{1-3}, V_{1-3}, W_{1-3}, U_{4-6}, V_{4-6}, W_{4-6}), spaced 60 degrees apart (360 degrees divided by 6 equidistant poles results in 60 degrees<Fig. 10 shows how an arrangement of poles may be placed along the circumference equidistantly>), and arranged in diametrically opposite pairs (Figs. 2 & 3 elements U_{1-3} diametrically opposed to U_{4-6},V_{1-3} diametrically opposed to V_{4-6} and W_{1-3} diametrically opposed to W_{4-6});
b) a first inverter for powering a first set of three of the poles (Figs. 2 & 3 elements T1-T12);
c) a second inverter for powering a second set of three of the poles (Figs. 2 & 3 elements T13-T24); and
d) means for detecting a malfunction in a pole (Fig. 3 elements 303) and, in response,
i) terminating power to all poles in the set containing the malfunctioning pole (Col. 9 lines 61-67 & Col. 10 lines 1-2<It shows how the apparatus will still function having a fault in a section. Moreover, it discloses a group of extra switches 501-506 in Fig. 5, with the appropriate set of activated switches after a fault has being detected a pole group may be terminated>), and

ii) maintaining power to all poles in the other set (Abstract, last paragraph).

Regarding claim 25 Mukai et al. in view of Stridsberg discloses an automotive steering assist system, comprising:

Stridsberg further discloses,

a) an electric motor which includes a stator which comprises six poles, spaced 60 degrees apart, such that:

i) a first pole is defined a zero degree (Fig 2. element U2),

ii) a second pole stands 60 degrees clockwise of the first pole (Fig. 2 element V2),

iii) a third pole stands 60 degrees clockwise of the second pole (Fig. 2 element W2),

iv) a fourth pole stands 60 degrees clockwise of the third pole (Fig. 2 element U5),

v) a fifth pole stands 60 degree clockwise of the fifth pole (Fig. 2 element V5),

vi) a sixth pole stands 60 degrees clockwise of the fifth pole (Fig. 2 element W5);

Since Stridsberg discloses distributed poles the one at the center has been taken in each case to measure the separation in degrees to the adjacent pole. The Fig. 10 also shows a configuration of poles equidistantly distributed along the circumference.

b) a first inverter which supplies three-phase current to a group containing a first, second and third poles (Figs. 2 & 3 elements T1-T12);

c) a second inverter which supplies three-phase current to a group containing the fourth, fifth and sixth poles (Figs. 2 & 3 elements T13-T24);

d) means for detecting a predetermined type of fault in a pole (Fig. 3 elements 303) and, in response, terminating current to all poles grouped with the faulty pole (Col. 9 lines 61-67 & Col. 10 lines 1-2<It shows how the apparatus will still function having a fault in a section. Moreover, it discloses a group of extra switches 501-506 in Fig. 5, with the appropriate set of activated switches after a fault has being detected a pole group

may be terminated>), while maintaining current to the other group(Abstract, last paragraph).

Claims 6 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukai et al. (US 5927430) in view of Stridsberg (US 6885162) and Heine et al. (US 6201322).

Regarding claim 6 Mukai et al.in view of Stridsberg discloses 5.
Stridsberg further discloses wherein said stator is provided with eighteen radially extending spokes (Fig. 2 at the center of each winding in the stator is shown an spoke element), circularly positioned at regular 20 degree intervals (Fig. 2, 360 degrees divided by 18 windings equals 20 degrees), said poles being wound on every third one of said spokes. It is disclosed a separation between each pole group calling it unwounded, the disclosure also adds that this spaces are narrower than the spokes.
As a result the 360 degrees of the circumference may be considered divided between the 18 wound stator poles (spokes), which will substantially result in 20 degrees.
Stridsberg further shows a rotor with no unwounded poles (Fig. 10), which shows an equidistant distribution of the poles teaching that may be applied to the rotor of Fig. 2.
Stridsberg further discloses distributed poles being wound adjacently, this distributed pole generates a resultant magnetic field as if you have only one wound at the middle spoke of each set of three. Obtaining, equivalently, a pole being wound on every third one of said spokes.
Stridsberg does not explicitly disclose a pole being wound on every third one of said spokes.
Heine et al. teaches how the radial force changes by varying the width of a winding (Col. 11 lines 24-28 and Figs 5, 6A, 6B) and the separation between them by skipping teeth (Col. 14 lines 6-10 and Fig 9).
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mukai et al. in view of Stridsberg device with the teachings of Heine et al. to make easier the manufacture of the motor (less windings) to obtain the

radial force required by changing the width of the coils (the more spokes the smaller width of the coil), it accomplishes improvements in the dissipation of heat as well.

Regarding claim 16 Mukai et al. in view of Stridsberg discloses an automotive steering assist system improvement according to claim 15.
Stridsberg further discloses wherein said stator is provided with eighteen radially extending spokes (Fig. 2 at the center of each winding in the stator is shown an spoke element), circularly positioned at regular 20 degree intervals (Fig. 2, 360 degrees divided by 18 windings equals 20 degrees), said poles being wound on every third one of said spokes. It is disclosed a separation between each pole group calling it unwounded, the disclosure also adds that this spaces are narrower than the spokes.
As a result the 360 degrees of the circumference may be considered divided between the 18 wound stator poles (spokes), which will substantially result in 20 degrees.
Stridsberg further shows a rotor with no unwounded poles (Fig. 10), which shows an equidistant distribution of the poles teaching that may be applied to the rotor of Fig. 2.
Stridsberg further discloses distributed poles being wound adjacently, this distributed pole generates a resultant magnetic field as if you have only one wound at the middle spoke of each set of three. Obtaining a pole being wound on every third one of said spokes.
Stridsberg does not explicitly disclose a pole being wound on every third one of said spokes.
Heine et al. teaches how the radial force changes by varying the width of a winding (Col. 11 lines 24-28 and Figs 5, 6A, 6B) and the separation between them by skipping teeth (Col. 14 lines 6-10 and Fig 9).
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mukai et al. in view of Stridsberg device with the teachings of Heine et al. to make easier the manufacture of the motor (less windings) to obtain the radial force required by changing the width of the coils (the more spokes the smaller width of the coil), another improvement accomplished is the dissipation of heat as well.

Response to Arguments

Applicant's arguments filed 02/06/06 have been fully considered but they are not persuasive.

Stridsberg'162 discloses the U, V, W windings and further discloses each of these windings subsets U_{1-3}, V_{1-3}, W_{1-3}, U_{4-6}, V_{4-6}, W_{4-6} (three coils each).

The windings sub-sets are grouped into 2 groups (North & South). This grouping of windings sub-sets reads on first and second m-phase groups.

Applicant argues that the 3 windings produce 3 magnetic fields.

Assuming this is true, the claim still met by the reference. The reference has 6 poles U_{1-3}, V_{1-3}, W_{1-3}, U_{4-6}, V_{4-6}, W_{4-6}, the fact that the field maybe combined does not negate the fact that there are 6 poles (distributed poles).

Applicant argues that the magnetic fields are vectorial summation of the respective magnetic fields of the coils.

It is obvious that any summation of distributed magnetic fields produce a resultant magnetic field, the physical effect of the distributed or resultant magnetic fields is exactly the same due to the relative position of the coils in Fig. 2 and the physical characteristics of electromagnetic fields (superposition principle).

102(e) rejections

Regarding claims 18, 19, 21 every 3 coils U_{1-3}, V_{1-3}, W_{1-3}, U_{4-6}, V_{4-6}, W_{4-6} there is a pole (N or S) as shown in Fig. 2 there are 3 North poles U_{1-3}, V_{1-3}, W_{1-3} and 3 South poles U_{4-6}, V_{4-6}, W_{4-6} consequently there are 6 poles; Stridsberg'162 Col. 4 lines 27-30.

103(a) rejections

Regarding claims 1 & 2 Stridsberg'162 discloses how the apparatus will still function having a fault in a section Col. 9 lines 61-67 & Col. 10 lines 1-2. Moreover, it

discloses a group of extra switches 501-506 in Fig. 5; with the appropriate set of activated switches after a fault has being detected a pole group may be terminated.

Regarding claims 3 & 13 Stridsberg'162 discloses a Y-connected winding set each driven by six switches Col. 10 lines 7-11 Fig. 1, which is the electrical configuration claim by the applicant in Fig. 2.
Moreover, Stridsberg'162 discloses in this paragraph that the number of poles in each pole group and the number of pole groups can be varied.

Regarding claim 5 Stridsberg'162 discloses a six pole configuration U_{1-3}, V_{1-3}, W_{1-3}, U_{4-6}, V_{4-6}, W_{4-6}, Col 4 lines 27-30 & Fig. 2 & Fig 3. Intrinsically disclosed is the separation of 60 degrees between poles. (360 degrees divided by 6 poles results in 60 degrees).

Regarding claims 6 & 16 Stridsberg'162 discloses 18 spokes around the rotor, starting from U1 clockwise there are: U1-U2-U3-V1-V2-V3-W1-W2-W3-U4-U5-U6-V4-V5-V6-W4-W5-W6 a total of 18.
Stridsberg'162 discloses a separation between each pole group calling it unwounded, the disclosure also adds that this spaces are narrower than the spokes.
As a result the 360 degrees of the circumference may be considered divided between the 18 wound stator poles (spokes), which will substantially result in 20 degrees.
Stridsberg'162 discloses distributed poles being wound adjacently, this distributed pole generates a resultant magnetic field as if you have only one wound at the middle spoke of each set of three. Obtaining a pole being wound on every third one of said spokes.
Additionally Stridsberg'162 shows a rotor with no unwounded poles in Fig. 10, which shows an equidistant distribution of the poles that can be applied to the rotor of Fig. 2.

Regarding claims 7 & 17 Stridsberg'162 discloses a group of extra switches 501-506 in Fig. 5, with the appropriate set of switches activated a pole group is terminated.

Regarding claim 11 Stridsberg'162 intrinsically discloses the two communication channels, Fig. 4 connections 404 from element 403 to element 406 (three upper lines of set 404, first channel and three bottom lines of set 404, second channel).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luis E. Román whose telephone number is (571) 272 – 5527. The examiner can normally be reached on Mon – Fri from 7:15 AM to 3:45 PM.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x 36. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
Information regarding the status of an application may be obtained from Patent Application Information Retrieval (PAIR) system.
Status information for unpublished applications is available through private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Luis E. Román
Patent Examiner
Art Unit 2836

LR/050106
1

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